

A TAXONOMIC STUDY OF PROTYNDARICHOIDES SPECIES (HYMENOPTERA, ENCYRTIDAE) FROM CHINA

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Abstract Three species of genus *Protyndarichoides* Noyes are studied. *Protyndarichoides longicornis* is described as new to science. *Protyndarichoides aligarhensis* (Fatma and Shafee) is recorded from China for the first time. Photomicrographs are provided to illustrate morphological characters of the species. A key to species of *Protyndarichoides* is provided to facilitate species identification. The type specimens are deposited in Institute of Zoology, Chinese Academy of Sciences, Beijing (IZCAS).

Key words Hymenoptera, Encyrtidae, *Protyndarichoides*, new species, China, Oriental region.

Introduction

Protyndarichoides Noyes (1980) is a small genus with five recognized species (Noyes, 2002). The types species, *Protyndarichoides nigriceps* Noyes is distributed in Neotropical region, e.g. Trinidad and Tobago (Noyes, 1980). *P. cinctiventris* (Girault) is recorded from Australia, New Zealand and India (Girault, 1934; Noyes, 1988; Singh and Agarwal, 1993b). *P. aligarhensis* (Fatma and Shafee) is known from India, England and France (Fatma and Shafee, 1984; Hayat, 1989; Singh and Agarwal, 1993b; Springate and Noyes, 1990). *P. indicus* is reported from India and China (Singh and Agarwal, 1993b; Zhang and Huang, 2004). However, the status of *P. punctatifrons* described by Sushil and Khan (1996) from India needs to be confirmed. On basis of the original description, it is probably a species belonging to genus *Lamennaisia* Girault. Little is known about biology of *Protyndarichoides* species except *P. aligarhensis* (Fatma and Shafee) was associate with Curculionidae (scolytids) on pine (Springate and Noyes, 1990).

In this paper, three species of genus *Protyndarichoides* Noyes are studied from China. *Protyndarichoides longicornis* is described as new to science. A key to known species of *Protyndarichoides* except *P. punctatifrons* is provided to facilitate species identification. Morphological terminology generally follows that of Noyes and Hayat (1984), Huang and Noyes (1994). Absolute measurements are used for body length. Relative measurements are used

for other dimensions. The drawings were made with the aid of a Leica M 10 microscope. The type specimens are deposited in Institute of Zoology, Chinese Academy of Sciences, Beijing (IZCAS).

Genus *Protyndarichoides* Noyes

Protyndarichoides Noyes, 1980: 224. Type species: *Protyndarichoides nigriceps* Noyes, by original designation.

Diagnosis. Female. Body length 0.8-1.5 mm; mandibles tridentate; occipital margin sharp; frontovertex varying from 1/3 to nearly 1/2 head width, usually with sparse piliferous punctures beset in shallow reticulations; ocelli forming an angle of more or less 90°; antennal toruli located level with lowest eye margins or slightly below this; antennae with scape cylindrical or sub-cylindrical; pedicel usually longer than F1; funicle 6-segmented, funicular segments often longer than broad, rarely sub-quadrate; clava 3-segmented but the apical two often not clearly separated; apex of clava slightly obliquely truncated, or even appearing rounded; dorsum of thorax moderately convex; mesoscutum with scaly, polygonal or striated-reticulate sculpture; scutellum covered with regular reticulate, or slightly to clearly striated-reticulate sculpture, but the apex of scutellum often smooth; fore wing hyaline or with an slightly infusate pattern; marginal vein more or less 3 × as long as width, usually longer than postmarginal vein and stigmal vein; postmarginal vein about as long as stigmal vein or slightly shorter, together with stigmal vein forming an very acute angle about 30°; propodeum about 1/4 scutellum length; base of gaster

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often yellowish, yellow or yellow brown, contrasting with the rest part which is more darker in coloration; hypopygium nearly reaching apex of gaster; ovipositor less than 3/4 mid tibia length; ovipositor sheath hidden or slightly exerted. Male. Generally similar to female except antenna and genitalia; antennae with pedicel usually shorter than the first funicular segment; all funicular segments with long hairs; clava indistinctly 2-segmented.

Key to genera including *Protynadarichoides*: Noyes (1980), Noyes and Hayat (1984), Noyes (1988), Zhang and Huang (2004).

The systematic position of *Protynadarichoides* is unknown (Singh and Agarwal, 1993b). We are unable to place it pending a further study.

Key to species of *Protynadarichoides* (females)

- 1 Mesoscutum with clearly striated-reticulate sculpture, at most in the middle of anterior half covered with regular scaly, or polygonal sculpture (Fig. 6) 2
- 2 Mesoscutum with regular scaly, or polygonal sculpture, at most hind margin of mesoscutum with weakly striated-reticulate sculpture ... 3
- 2 F1 about 1.5 \times as long as broad, clearly shorter than pedicel; antennal clava clearly wider than funicle, with maximum width more than 1.5 \times the maximum width of F6 (Fig. 3); *P. indicus*
- F1 about 2.5 \times as long as broad, nearly as long as pedicel; antennal clava hardly wider than funicle, with maximum width about 1.2 \times the maximum width of F6 (Fig. 10) *P. longicornis* sp. nov.
- 3 Thorax orange except pronotum, anterior margin of mesoscutum and scutellum dark brown; antenna yellow except F6 and clava black; fore and mid coxae yellowish white, hind coxa yellow; pedicel about as long as F1 and F2 combined *P. nigriceps*
- Thorax black or dark brown; antenna brownish except scape yellow 4
- 4 Fore coxa yellowish brown, mid coxa dark brown, hind coxa yellow *P. aligarhensis*
- All coxae dark brown *P. cinctiventris*

Protynadarichoides aligarhensis (Fatma and Shafee) (Figs. 1-2) New record to China

Parasyrphophagus aligarhensis Fatma and Shafee, 1984: 678-679. Holotype, India, ZDAMU*, not examined.

Protynadarichoides aligarhensis (Fatma and Shafee): Hayat, 1989: 283; Singh and Agarwal, 1993a: 99; Singh and Agarwal, 1993b: 133; Hayat, 1999: 393.

Diagnosis. Female. Body length about 0.82 mm, nearly completely dark brown except base and ventral surface of gaster; antenna with scape yellow, the rest yellowish brown except clava more darker; legs yellow but mid coxae dark brown; head about 2 \times as wide as frontovertex; ocelli forming an obtuse angle more than 90°; antennal scape sub cylindrical, about 5.5 \times as long as broad; all funicular segments longer than broad, rarely F6 subquadrate; clava 3-segmented, apically more or less obliquely truncated

(Fig. 1); mesoscutum with reticulate or slightly striated reticulate sculpture; scutellum sculpture shallow and often slightly striated; fore wing venation as in Fig. 2; basal cell of fore wing very sparsely setosed; ovipositor nearly 0.6 \times as long as mid tibia; ovipositor sheath hidden. Male. Body length about 0.7 mm, similar to female but for antenna and genitalia.

Host. Unknown. Material from France (in NHM, London) was associate with Curculionidae (scolytids) on pine (Springate and Noyes, 1990).

Distribution. China (Fujian, Guangxi); India; France; England.

Material examined. 1, 1, China, Fujian, Fuzhou, 15 Aug. 2001, coll. JIANG Zhi-Feng; 1, 1, China, Guangxi, Napo, 17 May 2003, coll. ZHU Chao-Dong.

Comments. *Protynadarichoides aligarhensis* is very close to *P. cinctiventris* (Girault, 1934). In *P. cinctiventris*, all coxae are dark brown. A comparison of the two species was made by Singh and Agarwal (1993b).

Protynadarichoides indicus Singh and Agarwal (Figs. 3-7)

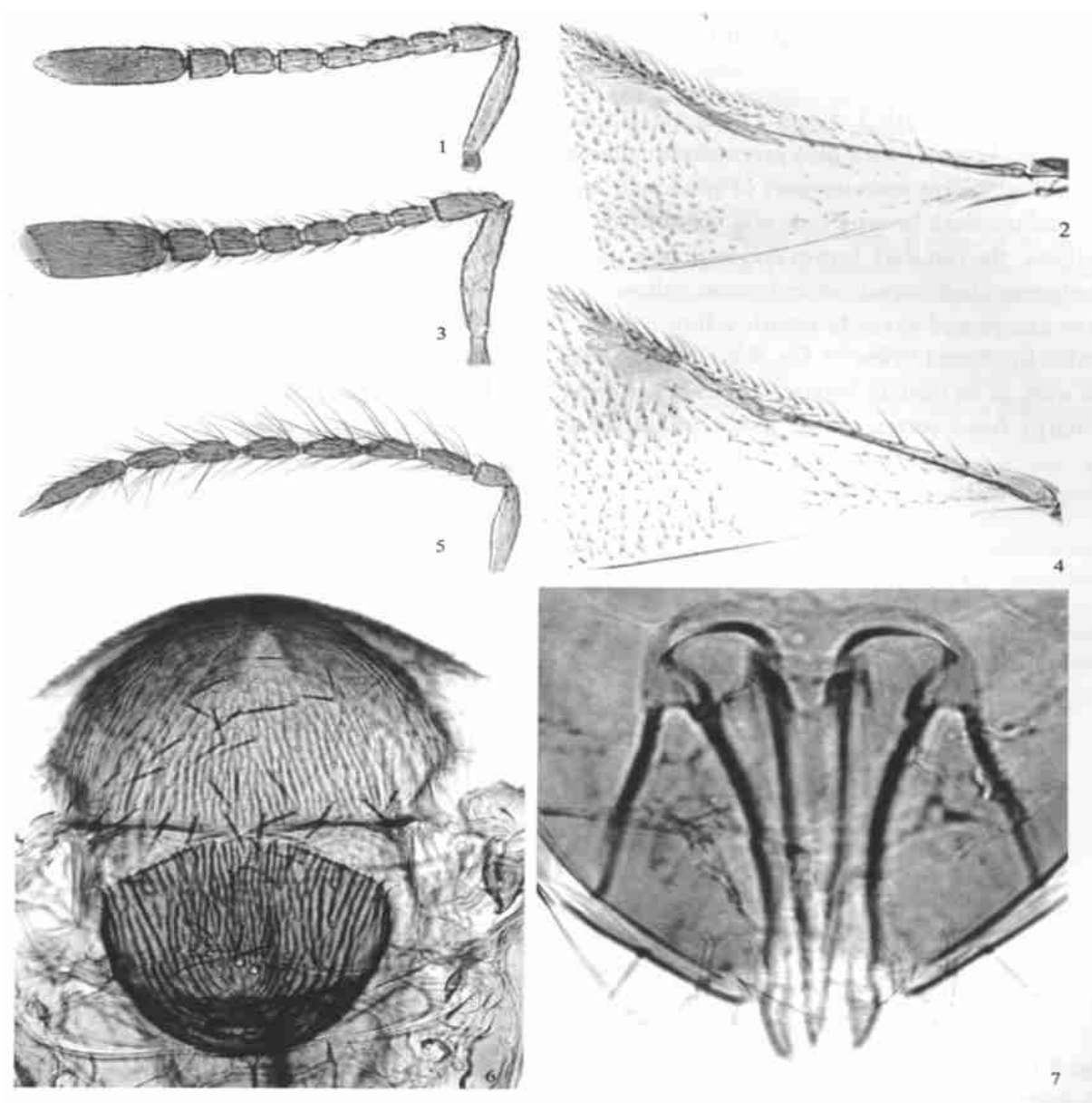
Protynadarichoides indicus Singh and Agarwal, 1993a: 99. Holotype, India, ZDAMU, not examined.

Protynadarichoides indicus Singh and Agarwal, 1993b: 132. Holotype, India, ZDAMU, not examined.

Protynadarichoides indicus Singh and Agarwal: Hayat, 1999: 393.

Diagnosis. Female. Body length 1.0-1.3 mm. head completely black, with blue green sheen; thorax varying from generally yellow to nearly completely dark brown; gaster yellowish basally; antennal scape varying from brownish yellow to dark brown, but clava usually dark brown; fore wing hyaline, rarely brownish; head about 2.5 \times as wide as frontovertex; ocelli forming an angle about 90°; antennal scape slightly expanded and flattened, about 4.5-6.0 \times as long as broad; funicle with F1-F5 longer than broad, F6 subquadrate; clava 3-segmented but the apical two segments not distinctly separated, clearly broadened and with maximum width more than 1.5 \times the width of F6; apex of clava clearly truncated (Fig. 3); mesoscutum with striated reticulate sculpture, sometimes anterior part with regular reticulate sculpture; scutellum sculpture deep and clearly striated-reticulate (Fig. 6); fore wing venation as in

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Figs. 1-7. 1-2. *Protynдарichoides aligarhensis*, . 1. Antenna. 2. Fore wing. 3-7. *Protynдарichoides indicus*. 3. Antenna, . 4. Fore wing, . 5. Antenna, . 6. Thorax in dorsal view, . 7. Ovipositor, .

Fig. 4; ovipositor about 0.4 \times as long as mid tibia; ovipositor sheath hidden or slightly exerted. Male. Body length 0.6-0.8 mm, similar to female but for antenna (Fig. 5) and genitalia.

Host. Unknown.

Distribution. China (Gansu, Guangxi, Sichuan, Yunnan); India.

Material examined. 1 , China, Gansu, Zhouqu, 19 July 1999, 2 350 m, coll. ZHU Chao-Dong; 1 , China, Guangxi, Napo, 30 Mar. 1998, ZHU Chao-Dong; 1 , China, Guangxi, Xing'an, 1 July 1985, 2 140 m, coll. LI Chang-Fang; 1 , China, Sichuan, Chengdu, 29 Sep. 1963, coll. LIAO Ding-Xi; 3 , 6 , China,

Yunnan, Xishuangbanna, 25 Nov. 2002, coll. ZHEN Wen-Quan; 3 , 10 , China, Yunnan, Xishuangbanna, 6 May 2003, coll. ZHEN Wen-Quan; 1 , 10 , China, Yunnan, Xishuangbanna, 30 Mar. 2003, coll. ZHEN Wen-Quan.

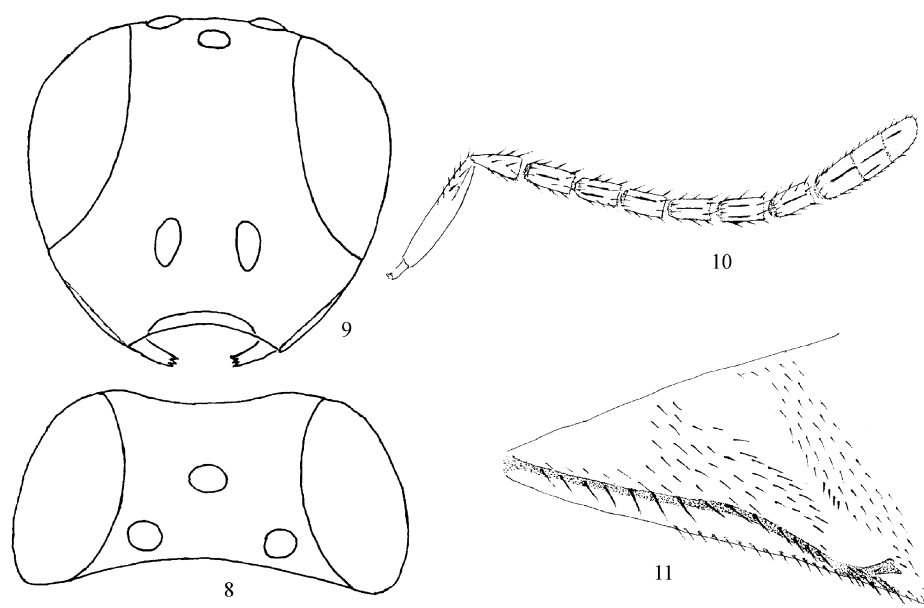
Comments. The specific name, *Protynдарichoides indicus*, was available in a key by Singh and Agarwal (1993a) and a detail description of *Protynдарichoides indicus* was published three months later by Singh and Agarwal (1993b) (Hayat, 2003). As noted by Singh and Agarwal (1993b), coloration of thorax varies much in *P. indicus*.

Protyndarichoides longicornis sp. nov. (Figs. 8-11)

Female. Body length 1.5 mm (holotype); head completely dark brown, with blue green sheen; thorax generally yellow except anterior part of pronotum and apex of scutellum dark brown; base and ventral part of gaster yellow, the rest dark brown and with blue green sheen; antennae dark brown except scape yellow; all legs yellow except mid coxae brownish yellow.

Head. In dorsal view (Fig. 8), head about 2.5 \times as wide as its median length (54:21); occipital margin sharp; frontovertex a little less than half head

width (24:54); ocelli forming an angle about 90°, posterior ocellus separated from occipital margin by a little less than half its own diameter and about half its diameter from the nearest eye margin; in facial view (Fig. 9), malar space about half eye length; antennal toruli located at level of lowest eye margin; antennal scape sub cylindrical, about 4 \times as long as wide; pedicel about 2.5 \times as long as wide, equal or only slightly longer than first funicle segment; all funicle segments longer than wide; clava three segmented, apically slightly truncated or even appearing rounded (Fig. 10); mandible with three teeth.



Figs. 8-11. *Protyndarichoides longicornis* sp. nov., . 8. Head in dorsal view. 9. Head in front view. 10. Antenna. 11 Fore wing.

Thorax. Dorsum of thorax moderately convex, with striated reticulations and dark setae; propodeum slightly less than a quarter scutellum of length; fore wing about 2.5 \times as long as wide (200:82); marginal vein about 3 \times as long as broad; post marginal vein about as long as stigmal vein (Fig. 11).

Gaster. Gaster about as long as thorax; cercal plates located in the middle part of gaster; hypopygium reaching apex of gaster; ovipositor sheath hardly exerted. Relative measurements: gaster length 85.

Male. Generally similar to female but for antenna and genitalia.

Host. Unknown.

Distribution. China (Hainan).

Holotype, China, Hainan, Jianfengling (108°90' N, 18°58' E), Apr. 1984, coll. LIAO

Ding Xi (IZCAS). Paratypes 2, same data as holotype.

Etymology. The specific name pertains to the long antenna.

Comments. *Protyndarichoides longicornis* resembles *P. indicus* but can be distinguished from the latter by F1 about 2.5 \times as long as broad and nearly as long as pedicel (F1 about 1.2 \times as long as broad and clearly shorter than pedicel in *P. indicus*), clava more than 3 \times as long as broad, and hardly or very slightly wider than funicle (clava less than 2.5 \times as long as broad, clearly wider than funicle in *P. indicus*).

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(Fatma and Shafee) and *Protyndarichoides cinctiventris* (Girault).

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中国 *PROTYNDARICHOIDES* 属 (膜翅目, 跳小蜂科) 分类研究

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摘 要 研究了我国跳小蜂科 *Protyndarichoides* 属; 详细描述了新种 *Protyndarichoides longicornis* sp. nov., 给出了 *Protyndarichoides indicus* Singh and Agarwal 和 *Protyndarichoides aligarhensis* (Fatma and Shafee) (中国新纪录

种) 的鉴别特征, 并提供了各个种类的特征照片或绘图。编制了 *Protyndarichoides* 属的分种检索表。模式标本保存在中国科学院动物研究所动物标本馆。

关键词 膜翅目, 跳小蜂科, *Protyndarichoides* 属, 新种, 中国, 东洋区。

中图分类号 Q969.546.4